



Superfund At Work

Hazardous Waste Cleanup Efforts Nationwide

Pioneer Sand Company Site Profile

Site Description:

An inactive sand quarry near Pensacola, Florida

Site Size: 11 acres

Primary Contaminants:

Polychlorinated biphenyls (PCBs), Light, Non-Aqueous Phase Liquid (LNAPL), pentachlorophenols (PCPs), and resin compounds

Potential Range of Health Risks:

Direct contact with contaminants can cause skin irritation, respiratory distress

Nearby Population Affected:

67,000 people within five miles

Ecological Concerns:

Five endangered species inhabit the area

Year Listed on NPL: 1983

Year Deleted from NPL: 1993

EPA Region: 4

State: Florida

Congressional District: 1

Success In Brief

EPA Oversees Cleanup Of Pioneer Sand Company Site

The cleanup of the Pioneer Sand Company site in Florida can be attributed to innovation and cooperation. Together with the State of Florida, the U.S. Environmental Protection Agency (EPA) and waste contributors worked to reduce the dangers posed by the site by:

- Removing 20 tons of highly contaminated soil in just three days;
- Stabilizing and immobilizing a liquid contaminant using an innovative technology; and
- Treating over four million gallons of contaminated water and 7,550 cubic yards of sludge.

In addition, EPA maintained regular communications with area residents to ensure their participation in the cleanup effort. The Agency also recovered the costs associated with emergency cleanup operations and site investigations, an estimated \$600,000.

The Site Today

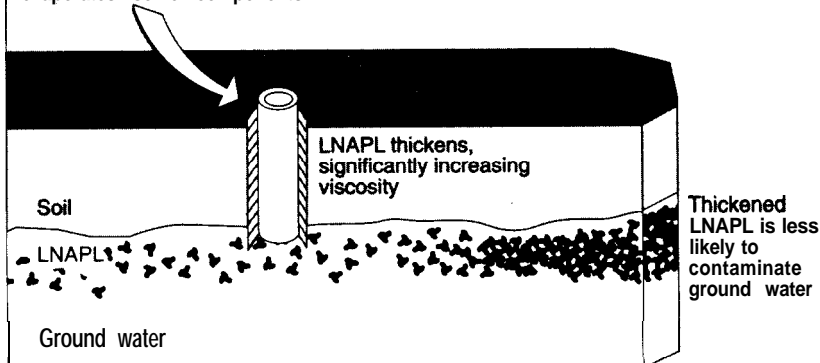
All cleanup activities at the Pioneer Sand Company site have been completed. Highly contaminated soil was removed, and a protective cover and alternate drainage system were installed to permanently

isolate any remaining contaminants. Future use of the site has been restricted by local officials.

The fenced site has been seeded for grass and wildlife again frequent the area. The parties responsible for cleaning up the site are presently monitoring conditions to ensure the integrity of the cover and protection of ground water. These monitoring activities began in July 1991 and will continue for at least 20 years.

Using Air To Solidify A Liquid Contaminant

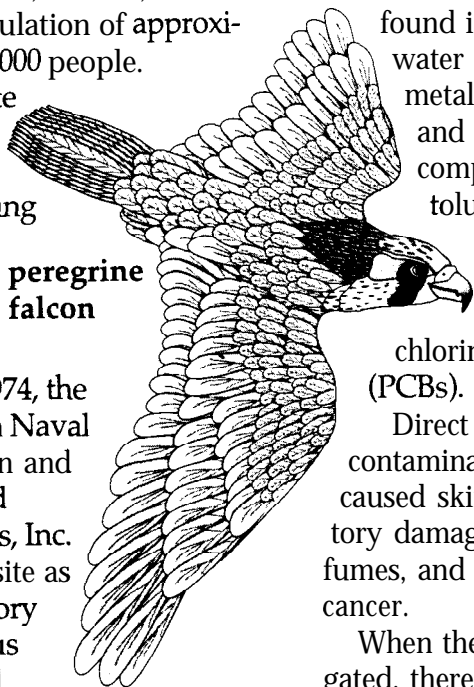
Pressurized air pumped into tight, Non-Aqueous Phase Liquid (LNAPL) evaporates some components



A Site Snapshot

The Pioneer Sand Company site is an 11-acre facility located five miles northwest of the city of Pensacola, Florida, which has a population of approximately 67,000 people.

The site was an active sand mining facility for over 25 years. **peregrine falcon** Beginning in 1974, the Pensacola Naval Air Station and Reichhold Chemicals, Inc. used the site as a depository for various industrial sludges and domestic and industrial wastes.



Approximately three of the 11 acres were contaminated due to improper waste disposal.

Contaminants from wastes found in soil and surface water included heavy metals (such as chromium and lead), volatile organic compounds (such as toluene, ethylbenzene, and xylene), pentachlorophenols (PCPs), and polychlorinated biphenyls (PCBs).

Direct contact with these contaminants could have caused skin irritation, respiratory damage from inhalation of fumes, and increased risk of cancer.

When the site was first investigated, there was concern that the underlying sand and gravel aquifer was in danger of being

contaminated. The aquifer is the only source of drinking water for the area and if con-

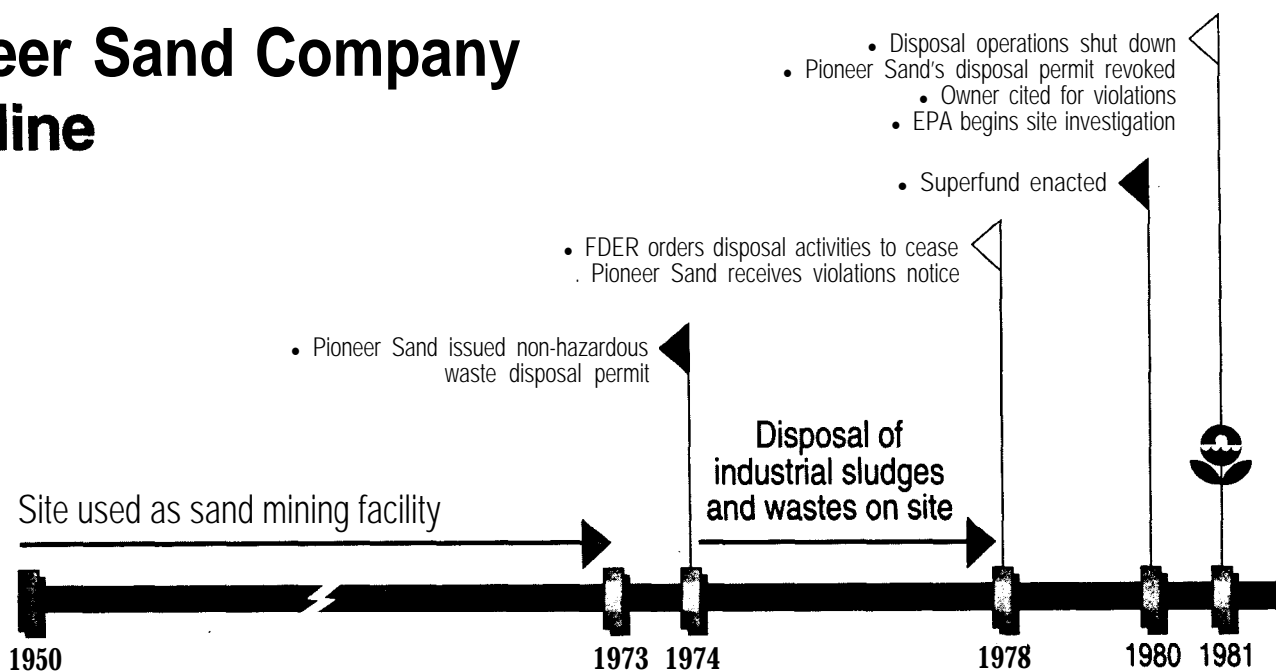
Five endangered species inhabit the area

taminated could pose a serious threat to the surrounding population.

Further investigations revealed, however, that the aquifer and 15 private wells bordering the site were not affected.

Nevertheless, five endangered species -bald eagles, peregrine falcons, red-cockaded woodpeckers, eastern indigo snakes and brown pelicans — inhabit the surrounding area and were threatened by the contamination.

Pioneer Sand Company Timeline



EPA and Waste Contributor Clean Up Pioneer Sand Company Site

Improper Disposal Creates A Hazardous Waste Site

The Pioneer Sand Company site was an active sand mining facility from the mid-1950s until 1973. The company produced sand used in the construction of roads and buildings. In 1974, after the site had become inactive, the owner of the company was granted a non-hazardous disposal permit.

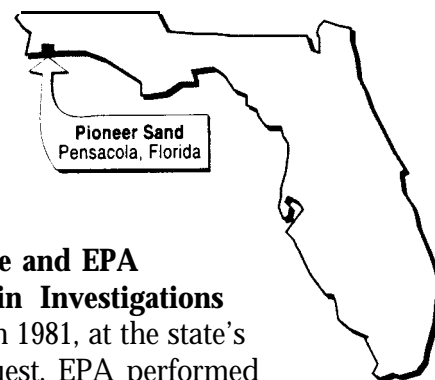
The owner allowed other companies to use the inactive sand quarry as a waste disposal facility. From 1974 to 1978, Reichhold Chemicals, Inc. disposed of phenols and resin compounds. Beginning in 1977, the Pensacola Naval Air Station also deposited domestic and industrial wastes on site.

In 1978, the Florida Department of Environmental Regula-

tions (FDER) sent a warning notice to Pioneer Sand citing violations of the Florida Air and Water Pollution Control Act. Between 1977 and 1981, Pioneer

Industrial and domestic waste products, including phenols and resin compounds, were deposited in the inactive sand quarry

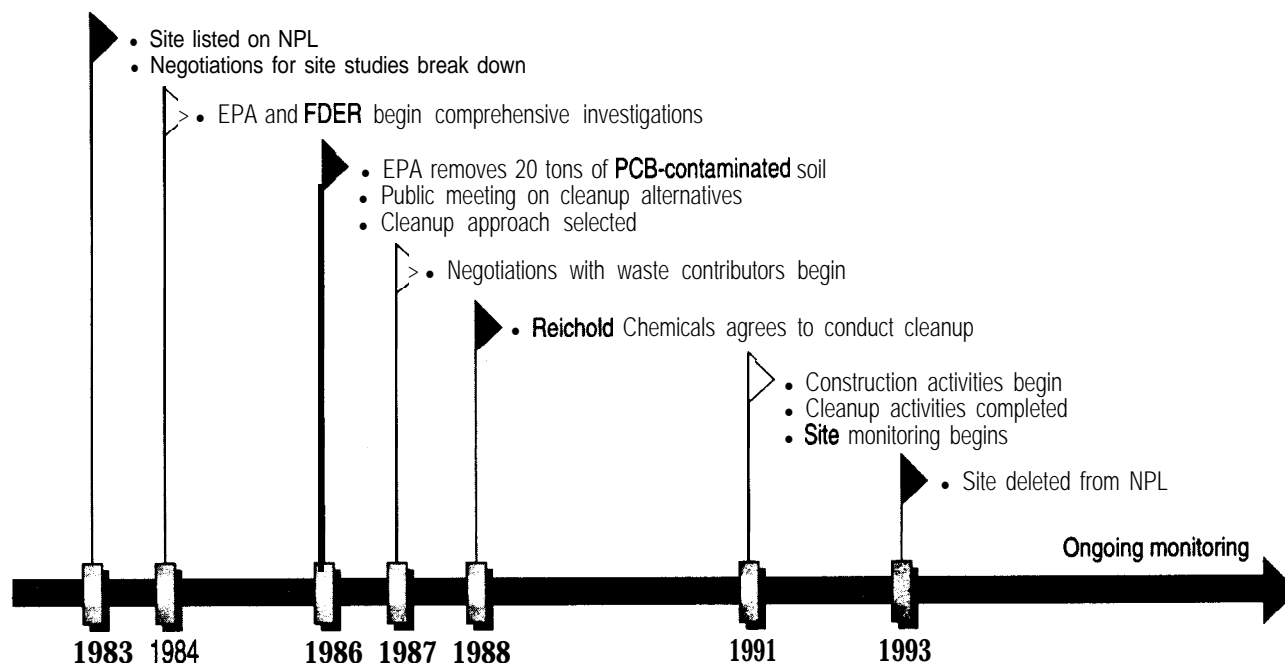
Sand received several citations from FDER for failure to conduct required sampling of on-site wastes and for accepting non-approved wastes. Because of these violations, FDER ordered Pioneer Sand to stop all disposal activities and revoked the company's waste disposal permit.



State and EPA Begin Investigations

In 1981, at the state's request, EPA performed preliminary investigations to determine the extent of the contamination. Based on these studies, in September 1983, the site was included on the National Priorities List (NPL), EPA's roster of uncontrolled or abandoned hazardous waste sites eligible for cleanup under the Superfund program, enacted in 1980.

EPA then began negotiations with the waste contributors, Reichhold Chemicals (formerly Newport Industries) and the U.S. Navy, to gain their involvement



in the study of site contaminants and potential cleanup alternatives. Despite extensive negotiations, an agreement could not be reached. In March 1984, to

**EPA excavated
20 tons of
PCB-contaminated soil
in three days**

avoid further delays, EPA and FDER proceeded to study the contaminants and then proposed potential remedies.

**EPA Selects
Long-Term Cleanup Plan**

EPA's preferred cleanup plan involved collecting any contaminants that could migrate off site

during cleanup, and treating polluted soil and water on site. EPA also proposed covering the entire site with a protective cap and seeding the cap for grass.

In July 1986, EPA presented this plan at a public meeting and addressed the community's concerns and questions. Area residents backed the selected long-term remedy for the site.

In order to immediately stabilize the site, EPA conducted an emergency removal in August 1986, excavating 20 tons of PCB-contaminated soil over a period of three days. The soil was taken to an approved hazardous waste facility for disposal. EPA also installed a security fence around the site to prevent public exposure to the remaining contaminants.



Heavy Duty Equipment: As part of the Pioneer Sand Company site cleanup, EPA conducted an emergency removal in which 20 tons of PCB-contaminated soil was removed in three days.

**Waste Contributors
Agree to Clean Up Site**

EPA and the waste contributors returned to the negotiating table in early 1987 to discuss the long-term cleanup **initiatives**. In 1988, Reichhold agreed to design and conduct the work.

The U.S. Navy preferred not to participate in cleanup activities directly, but agreed to reimburse

**Cleanup included
treatment of more than
four million gallons
of contaminated water**

Reichhold for half of the costs. Both Reichhold and the Navy agreed to reimburse EPA for costs associated with the earlier studies. To date, EPA has received approximately \$600,000.

Final Cleanup Measures

In January 1991, the cleanup team began stabilizing and treating the remaining on-site contamination. The team collected and treated over four million gallons of contaminated water from the site.

The team also mixed 7,550 cubic yards of contaminated sludge with cement and sand to ensure that the chemicals would not migrate off site. The resulting mass provided a solid support for

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Innovative Technology Stabilizes Hidden Contaminants

While designing the cleanup approach, workers discovered approximately 50,000-60,000 gallons of Light, Non-Aqueous Phase Liquid (LNAPL) 30 feet below the landfill surface.

LNAPLs are undissolved chemicals, typically petroleum products like gasoline and other fuels. These liquids float to the surface rather than mix with the ground water. A good analogy would be oil and vinegar salad dressing.

The challenge for the cleanup team was to prevent the LNAPL from migrating off site into surrounding areas. The cleanup team used an innovative technology which injected air into and through the LNAPL to partially solidify the chemicals.

Fifteen percent of the liquid components of the LNAPL was immediately evaporated, and the remaining 85% became a tar-like substance. Overall, the viscosity of the LNAPL increased, preventing chemicals from migrating off site or mixing with the ground water.

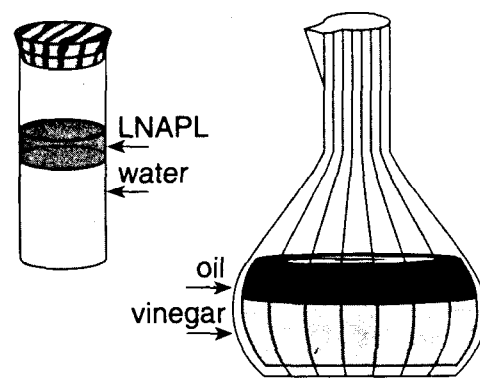
As an additional safeguard, a drainage system was constructed around the landfill to collect the LNAPL in the event that the air injections did not stabilize all of the liquid mass.

Other precautions were taken, including installation of gas ventilation systems to collect

any contaminated runoff or vapors. These systems remain in place to prevent any future contaminant migration.

Contaminants That Don't Mix

Light, Non-Aqueous Phase Liquid (LNAPL) floats on top rather than dissolves in water, similar to salad dressing.



EPA and Waste Contributors Clean Up Site

continued from page 4
the protective cover. This action was completed in just six weeks.

During the design of the cover, engineers decided to use a synthetic cap rather than clay, as it would be more protective and cost less to install and maintain. The cover and surrounding areas have since been seeded for grass.

EPA and FDER Monitor **Cleanup**

In March 1991, and again in May, EPA and FDER inspected the site to monitor progress. By

July the work had been completed. Continuous monitoring will take place over the next 20 years, during which time Reichhold must ensure that contaminants will not migrate off the site. While no longer considered a hazard, future use of the site will be limited to ensure that the protective cover will not be damaged.



Two members of the Pioneer Sand Company site cleanup team test a contaminant sample.

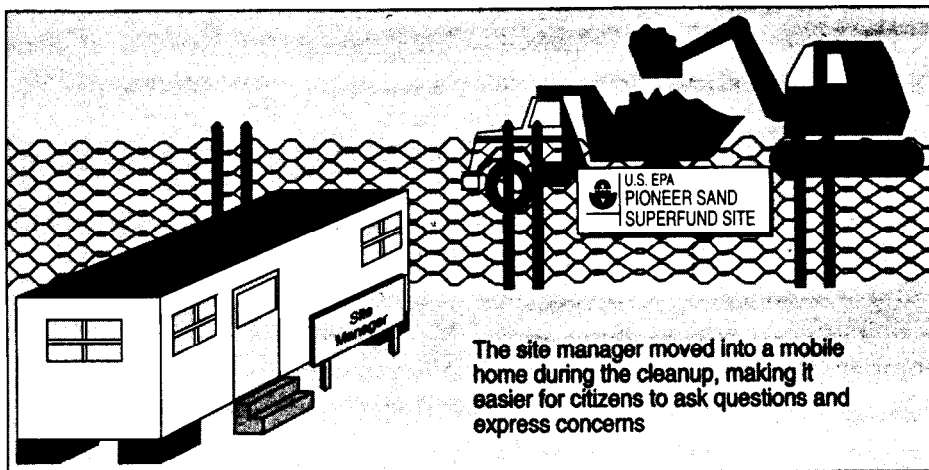
Cleanup Team Works Closely With Community

An essential component of the Superfund program is community participation in EPA site activities. EPA held public meetings throughout the cleanup to explain plans for the site and to answer questions regarding the work.

Community members cooperated with both EPA and Reichhold. One area resident allowed the cleanup team to use his driveway to access the site so

that an additional road would not have to be constructed.

The site manager also moved into a mobile home during the cleanup to keep a watchful eye on the site's progress. His proximity made it easier for citizens to ask questions and express concerns. Local residents felt that the manager's presence in the community demonstrated a genuine concern for the restoration of the environment.



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Success at Pioneer Sand

Cleanup is complete at the Pioneer Sand Company site.

EPA reduced the immediate threat to the environment and successfully negotiated with waste contributors to conduct the remaining cleanup actions. In addition, the Agency recovered an estimated \$600,000 in past costs from the responsible parties.

Reichhold Chemicals is currently monitoring the ground water to ensure the stability and integrity of the site cover.

EPA deleted the site from the National Priorities List in 1993.

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